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Sustainable Innovation and Entrepreneurship Methodology

A manual for student project work in Innolabs

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05 Sustainable Innovation and Entrepreneurship Methodology

A manual for student project work in Innolabs

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Preface

This report has been written on the basis of the work that has carried out in the Innolabs project (<http://innolabsproject.com/>). The EU has defined smart and sustainable growth as one of the priorities (EU Strategy 2020). An essential part for reaching these priorities is innovation. The project ran from September 2014 until August 2016

The Innolabs project was implemented by the lead partner “Foundation for Society” (Latvia) in cooperation with project partners Stichting NHL (The Netherlands), Aalborg University (Denmark), Cyprus University of Technology (Cyprus), Interfusion Services (Cyprus), Estonian Academy of Arts (Estonia) and Stockholm Environmental Institute Tallinn Centre (Estonia) and Vidzeme University of Applied Sciences (Latvia).

The aim of the Innolabs project was to support transfer of creative, bottom-up innovation approaches for fostering smart and sustainable growth based on more experienced partners’ knowledge in the Netherlands and Denmark. The project aim was to create student innovation laboratories in the project partner universities.

The following activities have been carried out in the project:

- 1) Study visits;
- 2) Feasibility studies about innovation conditions in partner universities in Latvia, Estonia and Cyprus;
- 3) Elaboration of development plans for innovation laboratories in Latvia, Estonia and Cyprus partner universities;
- 4) Student co-creation projects in the newly established innovation labs in Latvia, Estonia and Cyprus;
- 5) Development of methodologies and guidelines for innovation labs;
- 6) Different dissemination activities

Discussing and planning student innovation laboratories have been an important part for partners in the Innolabs project to become innovative. This is a journey that is not yet completed and, as with all journeys, there will be modifications to student innovation labs along the way. This is an essential part of a learning process. The Innolabs project is now completed, but all partners in the project, as well as other interested parties can continue to work on student innovation laboratories.

Aalborg, August 2016

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Executive Summary

The objective of the *InnoLabs project* is to facilitate cross-sectoral, multidisciplinary solutions to complex social problems in various European settings. InnoLabs are university-driven physical and/or organizational spaces that function as student innovation laboratories and operate as a local or regional “co-creation platform for sustainable solutions” to promote structural innovation.

In this manual, the Sustainable Innovation and Entrepreneurship Methodology will be described.

The organisational guidelines mainly take point of departure in how Aalborg University (AAU) in Denmark has organised this in daily practice. In line with the objectives of the InnoLabs project (output 05), partners in the InnoLabs project have reflected, evaluated and concluded the project experiences, which are described in this report.

The InnoLabs project was developed for the 2014 call of Erasmus+ funds KA2- Cooperation and Innovation for Good Practices.

1 Organisational guidelines

1.1 Introduction

This section describes the Sustainable and Entrepreneurship Methodology from an organisational point of view. We take point of departure in how Aalborg University (AAU) in Denmark has organised this in daily practice, by taking point of departure in the implementation of large (Innolabs) student projects (10-15 ECTS) in existing curricula. In line with the objectives of the Innolabs project (output 05), partners in the Innolabs project have reflected, evaluated and concluded the project experiences, which are described in this section. This guidance material, therefore, serves a purpose of exchanging experiences and sharing them with the rest of the world for establishment, integration and running of innovation labs in higher education organisations.

In the following sections we focus on the following conditions that are important when implementing large student projects in existing curricula:

1. Semester theme and project catalogue
2. Group formation process
3. Project groups and supervision
4. Group examination

Below, we describe these conditions in more detail and in the appendixes we have provided various templates as well as concrete examples of these conditions.

Experiences from Vidzeme University of Applied Sciences, Latvia

At Vidzeme University of Applied Sciences (ViA), projects are not yet integrated in existing curricula. Student involvement in activities is voluntary and students are involved by publishing the information about planned activities and by talking with the students individually. This is an effective approach for ViA, since it is a small university. In this way, ViA – as well as the region and Latvia – will grow in their way of thinking, which makes it easier in the future to integrate projects in existing curricula. At ViA they believe that they first need some voluntary rounds of activities in order to proof the importance of these kinds of projects. In 2016, ViA they launched their first round of activities, called I-LAB. They published call for students who are ready to participate and they talked with active students individually. In order to make participation more interesting and useful for students, the students got some extra ECTS-points in their existing study courses or within the process of co-creation projects the students had started to prepare their diploma work. The benefits of the Innolabs approach were different for each team and each student.

Experiences from Cyprus University of Technology (Cyprus) (CUT)*

At CUT students participate in a full year team project during the 3rd year. CUT invites various stakeholders in meetings where the university presents to them how the students by means of project work can provide software engineering products to assist their business. Interested stakeholders provide a small description of their company/business and their needs. Teachers decide which projects are best for the students to work with. The student teams are divided equally taking into account the student's grades on specific courses from previous semesters.

Students' teamwork is divided between two courses:

1. *The first semester (fall) is a more theoretical semester with seminars, presentations, lectures, etc. Students have also meetings with the stakeholders in order to capture the stakeholder's requirements and specifications that will be used later to design and build a full software system.*
2. *The second semester (spring) is a more practical semester as students are designing and building the software taking into consideration the stakeholder's requirements and specifications from the previous*

semester. Students have regular meetings with Teachers.

** Experiences are from Computer Engineering and Informatics Degree*

Experiences from Estonian Academy of Arts, Estonia (EAA)

The EAA sustainable design course organised by the Sustainable Design Lab (SDL) is a school-wide elective course for 1st year MA students during the 2 semesters (12 ECTS). The course is designed first of all for design students but it is also available to other students from different faculties. The course will allow students to develop basic skills in creative problem solving, innovation and sustainability based design thinking. The course provides students with the necessary knowledge and practical skills to carry out an integrated design thinking and product development process. It leads students through the major phases of the creative problem solving and sustainable design process, as supplemented by the mind-set and methods of design thinking. The course also aims at preparing students for the professional performance through a realistic and coherent cooperation in various areas and with different partners in order to understand sustainability actions and creations in the background of the global economy, manufacturing, environment, legislation, society and communities.

The learning process is divided into two semesters.

- In the first semester (fall), the studies are mainly in the form of lectures and seminars, providing the necessary theoretical knowledge of sustainable product design and development. An overview of the social and environmental problems, viable economic models will be given and the various systems, principles and ways of calculation of the environmental impact methods will be analysed. Furthermore students are divided into multidisciplinary teams, so that they can prepare for the selected product/service development projects. Students can take the theoretical part as a separate course.*
- During second semester (spring) the student teams are assigned supervisors/mentors based on their specific project theme and will complete the specific product/service development project. Semester projects are executed together with various organizations and enterprises. Individual and group mentoring was complemented by a number of seminars and workshops with stakeholders and mentors.*

1.2 Semester theme and project catalogue

At AAU, each semester has a theme, which is described in the curriculum. Prior to the beginning of the semester, the semester coordinator has – together with the supervisors – formulated various project proposals. Students are also invited to formulate project proposals. It is the responsibility of the semester coordinator, together with the supervisors, to ensure that the project proposals relate to the semester theme and follow the learning objectives as described in the curriculum. In addition, the semester coordinator and the supervisors have to ensure that the projects can be carried out in the time assigned to the project as well as that – if relevant – equipment and laboratories are available. The project proposals are collected in a project catalogue (see appendix 3).

The project catalogue will be made available to the students approximately 1-2 weeks before the start of the semester.

Experiences from Vidzeme University of Applied Sciences, Latvia

At ViA they did not select a theme for the projects. The main requirement for the companies was to make the students work with a real-life problem. Again, an individual approach was chosen. Researchers from ViA talked to companies in the Vidzeme region. Only those companies where selected that could offer students are real-life problem and that where able to work with students. In 2016 5 different problems from 4 different companies had been selected as project proposals. Based on this, ViA developed a project proposal

catalogue. Students were able to select their priorities. The semester coordinator allocated the project proposals among the students based on their choice as well as their skills and experiences.

Experiences from Cyprus University of Technology (Cyprus) (CUT)

At CUT they do not provide a project catalogue to the students. The project the students will work on is decided upon between the stakeholders and the group of students working on the problem.

The identification and engagement of relevant stakeholders, is a task mainly fulfilled by the management staff of CUT and according to the needs and problems that could be potentially solvable through the competences and skills of the students and their academic supervisors (teachers, PhD associates). During this particular stage is quite crucial to indicate the different perspectives on what can be considered potentially credible evidence of outcomes and impacts whilst gaining an in-depth understanding on a community of interest, mostly through a gathering process for relevant information about social diversity, history, existing networks, and overall socio-economic characteristics.

Experiences from Estonian Academy of Arts, Estonia (EAA)

At EAA the management staff of Sustainable Design Lab (SDL) usually selects the themes of the projects. The SDL actively communicates with different companies and organisations to select appropriate student project ideas. Also other departments of EAA are involved to find (e.g. design and architecture faculty) and develop real-life project ideas and problems to be used as student projects. Project ideas are presented to registered students who could select the project they prefer.

1.3 Group formation process

The group formation process is an important part of the project based learning approach. Groups can be formed differently. Either the university divides students into groups (i.e. entirely administratively formed groups) or students run the group formation process themselves. Both processes will be described below.

1.3.1 Administratively formed groups

At the first semester (bachelor) at AAU the groups are formed administratively. When the students arrive at the university, they are classified in a group. From the second semester onwards, students run the group formation process themselves (see also next section).

At semesters with international students groups can be formed administratively in order to make a distribution of nationalities in the different groups. The same is valid for semesters with a large disparity between genders. At some educations, only few women/men study. In that case, it is desirable that each group has at least 2 women/men.

1.3.2 Group formation processes managed by students

Even though the students manage the group formation process themselves, the semester coordinator and the supervisors will participate as well. Normally, the semester coordinator starts with a short introduction, in which he/she presents the theme of the semester as well as the other courses taught at the semester. The semester coordinator also defines the conditions for the group formation (e.g. the number of groups, the number of students in each group etc.) and supervises the process.

At AAU, the group formation process is not closed until all students have been assigned to a group.

Experiences from Vidzeme University of Applied Sciences, Latvia

At ViA two approaches have been used to divide students into groups:

- 1) Group formation process managed by students*
- 2) The coordinators formed the groups – this approach was used in case students were not able to find a group during the opening event. Two criteria had been used to form the groups: 1. The group should be multidisciplinary and consisting of male and female students and 2. The*

coordinators took into account the project students wanted to participate in. Based on ViAs experiences, groups that had been formed by students themselves were much more successful.

Experiences from Cyprus University of Technology (Cyprus) (CUT)

Students are divided into small groups to develop (analyse, specify, design, program, and document) a real-world software application with a client organization coming from the local area. The aim is to gain experience in the various phases of software development and in different aspects of group working. Special attention is given to Project Management activities, such as scheduling, time and resource management, production of reports and deliverables, etc. The group develops abilities to "pick up" and use new development tools and environments without formal training. The final product is a fully operational software system that is installed at the client site with execution of professional user acceptance testing and appropriate training.

Experiences from Estonian Academy of Arts (Estonia) (EAA) and Stockholm Environment Institute (Estonia) (SEI)

At EAA the students first managed the group formation process. This led to the situation where the groups were not equal in terms of size and capacity/knowledge. Therefore coordinators had to re-organise some of the groups in the later stage.

Based on EAA experience in the case of course where students come from different faculties (not familiar to each other) the coordinators of the course should form teams rather than allowing students to self-select. For university wide courses it is also recommended to form teams based on students background (main subject) so that group members are diverse in knowledge/ability levels but at the same time taking into account who also have common blocks of time to meet outside the course/class. Also, it is good to set out a clear set of guidelines for team functioning and have the group members formulate the roles/responsibilities of the team and a common set of expectations of one another to turn the student groups into effective teams.

The experiences of EAA and SEI that have included group work in their courses agree that groups of between 4 and 6 students seem to work best, though depending on the task or nature of the project, larger groups (8-10 students) can function also successfully.

Determining how the groups will be formed can be more complicated, since ideally the groups should be diverse enough to include students with a range of intellectual abilities, academic interests, and cognitive styles.

Allowing students to select their own group members can work well in the situations when students know each other, but this method always runs the risk of further isolating some students or creating cliques within the student group as a whole

1.4 Contracts

In some projects, especially at the 9th semester, when students do their traineeship, a contract ("learning agreement") will be signed by the student, the sending university and the receiving institution (See appendix 5).

1.5 Project groups & supervision

Working in groups with 4-5 students on a 10-15 ECTS project is not about rote learning. Students learn more than the obligatory academic skills (curricula). Project work also adds a social dimension and equips students with important skills for the labour market.

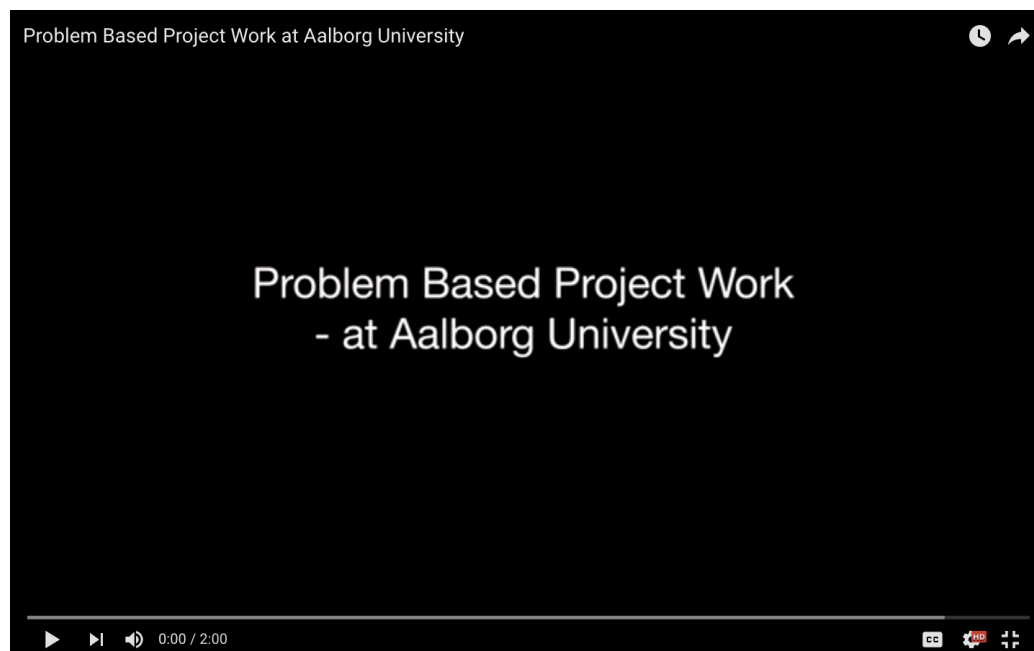
The group work based student projects also require on-going supervision of group and work processes. While the amount of supervision necessary will depend on the nature and duration of the project, as well

as students' prior experience with group work it is important to supervise and monitor groups so supervisors can redirect, give advice, or intervene if necessary.

At AAU, each group is appointed a supervisor (academic staff member). However, the group has the overall responsibility for defining and writing the project. That means that the group has the responsibility to arrange supervision meetings with their supervisor. It is important to stress that the groups do not have an unlimited number of supervision hours available. It is also the responsibility of the group to define a problem that they want to investigate (they can take point of departure in the project proposal).

The project work is completed with an exam (see section 2.6).

The project work together with lectures, literature and cooperation with the corporate sector will help students gain a deeper insight into the subject they are examining than if they had been working on their own.



See <https://www.youtube.com/watch?v=OSqv7Gv0yxk> (YouTube 2013a)

Experiences from ViA (Latvia), EEA (Estonia) and SEI (Estonia)

Problem-based project work at ViA is organised as follows:

- 1) 4-7 students/group*
- 2) Project period: 3-3,5 months (1 study semester)*
- 3) One academic staff member is assigned as supervisor. At least 2 meetings/month*
- 4) One representative of the company is assigned as consultant and meets with the students at least once a month*
- 5) 4-5 workshops are organised for all student groups (design thinking, creativity workshops, team building, presentation skills etc.)*
- 6) Other events:*
 - a. Opening event (group formation process)*
 - b. Mid-term event (students present current status of their projects)*
 - c. Final event (open event attended by companies representatives and other interested parties. At this event students present their solutions. An independent jury gives comments to the students and determines the best group/project)*
- 7) Individual meeting with companies are organised after the final event. The students transfer full solution to the company*

Basically the same approach was used in Estonia with the difference that the group formation and first steps were already done in the end of the first semester. So the total length of project work in Estonia is approximately 1,5 semester. However, the main project work is done in the second semester.

1.6 Evaluation of group work

Group work can be evaluated in different ways, either individually or group-based. At AAU we have experience with both types of evaluations. Since 1974, when AAU was established, projects were assessed in group based project exams. However, in 2006 the Danish government banned the use of group exams in the whole education sector. AAU had to change its assessments of the projects to an individual project exam where each individual student sat alone with the examiners, one of which was the supervisor. In 2012 a new government lifted the ban of group exams wherefore AAU reintroduced group based project exams from January 2013 (Dahl & Kolmos, 2013). Several studies have been carried out on assessment methods. Based on these studies, Dahl & Kolmos (2013) state that both students and supervisors preferred the group based project exams. In addition, Dahl and Kolmos (2013) highlight some other interesting acknowledgements:

- Students who had tried the individual project exam were more positive towards it than students who had not, but even this group preferred the group based project exam.
- Individual exams were seen to be in contradiction to the intentions behind Problem-Based Learning (PBL).
- In the individual project exam, there was a lack of assessment of core PBL competences as well as a lack of the overall response to students' project reports and results.

Experiences from Estonian Academy of Arts (Estonia) (EAA) and Stockholm Environment Institute (Estonia) (SEI)

Since accountability is essential in ensuring successful project work, supervisors need to determine how best to grade, taking both individual and group effort into consideration. It is recommended to assess the individual accomplishment in the group work as well, so that members feel that their contribution to the group has been evaluated adequately.

It is also recommended that the group achievement should be based both on the evaluation of the final product (project outcome) and the groups assessment of its operations. Most often the group efforts results in a report (paper) and/or presentation of the solution to a specific problem studies.

EAA experience also shows that when explaining the evaluation and grading procedures early in the course, before the group work begins, students probably express less discomfort with the idea of a group grade, and will feel peer pressure to contribute and work toward the common goal. Sometimes students are concerned that they not appear foolish or irresponsible to their classmates

As mentioned before, at AAU, students do have a group examination, in which they are tested in their project work. During the examination, all students in the group will each make a small presentation, and the students will each be tested individually (see also YouTube movie below).

The point of departure for the examination is the *project report* and the examination consists of a *joint presentation*, a *joint discussion* and *individually oriented questions*. Participants in the exam are (Faculty of Engineering and Science and The Faculty of Medicine 2013):

- The student(s)
- Examiners (supervisor(s))
- External¹ or internal² examiner

Time allocations are as follows (Faculty of Engineering and Science and The Faculty of Medicine 2013):

- For projects of *15 ECTS or more*, 45 minutes per student for examination and grading processes with a maximum of 5 hours in total for the total project group.
- For projects of *less than 15 ECTS*, 35 minutes per student with a maximum of 4 hours in total for the entire project group.
- For professional bachelor's projects, bachelor's projects, master's thesis, master projects, 60 minutes per student

The assessment is made of the individual student based on an overall evaluation of the project report³, the presentation, the joint discussion and the individually oriented questions. In order for the student to pass the exam, all these aspects must be satisfactory (Faculty of Engineering and Science and The Faculty of Medicine 2013).

¹ An external examiner is appointed by the Danish Agency for Higher Education. These can for example be people from other universities, municipalities or companies.

² A teacher (examiner) designated by the study board from among the teachers at the university.

³ The project report is part of the overall basis for the assessment, but is not given an independent grade.



See: <https://www.youtube.com/watch?v=-uhQMY07Cw8> (YouTube 2013b).

At AAU, on some semesters, students are asked to make a poster or a press release as a supplement to the report. By means of a poster/press release students have to show their ability to present their project work in a popular scientific way.

Experiences from Estonian Academy of Arts (Estonia) (EAA)

At EAA students had pass/fail assessment and credit test according to their participation in seminars and group work. Posters or slides presentations are always mandatory in the end of each semester at EAA.

2 Appendix: Project proposal

2.1 *Template project proposal*

Template project proposals

Theme:
Brief description of project idea:
Examples of research questions:
Examples of relevant methods or theories/theoretical approaches:
Collaboration with other organisations (if any):
Ideas for data collection/field studies (please also indicate if financial support has been obtained):
Examples of relevant literature:
Project proposed by:

2.2 Examples project proposal:

In this SECTION, you can find examples of project proposals, as used in the educational programme “Environmental Management and Sustainability Science”, 1st semester master Aalborg University (Denmark). The theme of this semester was “Business & Sustainability Management”

All project proposals together form the project catalogue.

EXAMPLE 1:

Theme: Sustainability Assessment of Raw Materials
Brief description of project idea: Sustainability Assessment of Raw Materials and suggestion to strategy and plan for improvements in Danisco.
Examples of research questions: What does sustainability mean in relation to Danisco's key raw materials and how can Danisco develop a strategy and methodology to assess and improve the sustainability performance of their upstream suppliers. Key raw materials are e.g. palm oil, rapeseed oil, seaweeds, LBG, and Guar. Ideally the strategy and approach should be practical and scientifically relevant and take into account the perceptions among Danisco's stakeholders.
Examples of relevant methods or theories/theoretical approaches: CSR, LCM, Ecosystem analysis, water footprint etc.
Collaboration with other organisations (if any): Sustainable Agriculture Platform, The Sustainability Consortium, WBCSD etc.
Ideas for data collection/field studies (please also indicate if financial support has been obtained): Interviews with purchasing team in Danisco, interviews with sustainability teams in other companies that face the same challenges etc.
Examples of relevant literature: http://publications.danisco.com/epub/39/
Project proposed by: M.T.

EXAMPLE 2:

Theme: <i>Sustainable Consumption and Production</i> Environmental regulation and cradle-to-cradle: a market-driven development?
Brief description of project idea: Most industrialised countries have environmental regulations prescribing the responsibilities of companies. In the mid-1980s this was generally known as “cradle-to-grave” resource management. Today, focus in environmental regulation is on prevention of waste and responsible care of the earth's natural resources. The focus on recovery of resources, recycling and reuse can be described as “cradle-to-cradle” resource management.
Examples of research questions: <ul style="list-style-type: none"> • What interest do companies have in implementing cradle-to-cradle principles? • What are the main driving forces for companies to implement cradle-to-cradle principles? • Implementing cradle-to-cradle: is it regulatory push or a market-driven development? • To what extent can ecological modernisation explain developments in the implementation of cradle-to-cradle principles in companies? • To what extent can regulation theory explain developments in the implementation of cradle-to-cradle principles in companies? • What role do municipalities play in encouraging companies to work with cradle-to-cradle
Examples of relevant methods or theories/theoretical approaches: <ul style="list-style-type: none"> • Analysing a more foresighted and preventive type of environmental regulation by using ecological modernisation theory • Regulation theory • Qualitative interviews with companies that work with Cradle-to-Cradle principles; why have they chosen to do so? What experiences do they have? What advantages and disadvantages do they see with this relatively new approach? • Quantitative analysis; • Literature study • Case study
Collaboration with other organisations (if any): <ul style="list-style-type: none"> • Partners in the Cradle-to-Cradle Islands project (www.c2cisland.org) • The Environmental Protection and Encouragement Agency (EPEA) (http://epea-hamburg.org) and the Danish Cradle-to-Cradle organisation (http://vuggetilvugge.dk/) • Danish companies that are C2C-certified • Partners/companies in the Carbon 20 project
Ideas for data collection/field studies (please also indicate if financial support has been obtained): Danish companies that work with Cradle-to-Cradle Municipalities that have cradle-to-cradle high on their agenda
Examples of relevant literature: <ul style="list-style-type: none"> • A.P.J. Mol and D.A. Sonnenfeld (ed.)(2000), Ecological modernisation around the world. Perspectives and critical debates. Frank Cass. • Smink, C.K. (2002), Modernisation of Environmental Regulation. Aalborg University. Department of Development and Planning. • M. Jänicke and K. Jacob (2001), Ecological modernisation and the creation of lead markets. FFU, Berlin.
Project proposed by: C.S.

EXAMPLE 3:

Theme: <i>Sustainable Consumption and Production</i> Improving Environmental Performance at Ergonomic Solutions
Brief description of project idea: Ergonomic Solutions is Europe's leading manufacturer in developing and manufacturing EPOS and in-store technology mounting solutions for the global retail markets. Our Headquarters are located in Epsom, UK and our manufacturing base and factory in Aalborg, Denmark. We also have sales companies and distributors located around Europe and in North America. We consider ourselves a professional and environmentally conscious organization that acknowledges the impact our activities may potentially have on the environment. It is for this reason that in the remainder of this year we will be setting up an environmental, cross departmental 'Green Team' to pursue strategic environmental efforts. We aim to position our company at the forefront of environmental innovation by being proactive and going that little bit further than other companies to ensure not only our compliance but set high standards and be seen as innovators and leaders in this field wherever possible. In addition we are still a business and wish to investigate any relevant business efficiencies, economic benefits or schemes for our business processes and our products. We seek assistance in the following areas: <ul style="list-style-type: none"> • Moving from a reactive to proactive long term environmental strategy. • Evaluation of our current environmental performance with regards to relevant legislation and regulations at national, European and International levels. • Improving environmental communications, identifying appropriate reporting mechanisms and methods of corporate disclosure e.g policy statements, national and international regulation compliance statements. • Implementation of an ISO 14001 environmental management system.
Examples of research questions: Can be based off the assistance area points described by Ergonomic Solutions in the previous. Research questions may be formulated at the strategic level (e.g. focusing on how the company may support the shift to a more proactive and long-term environmental strategy) to the operational level (e.g. what is the current company's environmental performance at the legislative level and what concrete measures may be taken in improving environmental communication)
Examples of relevant methods or theories/theoretical approaches: <ul style="list-style-type: none"> • Corporate environmental management approaches (see the book Tools for Sustainable Development) • Stakeholder theory, especially concerning environmental communication • Organizational theory, ideal for supporting an ISO 14001 implementation plan • Communications theory, merged with one or both of the theories above
Collaboration with other organisations (if any): Ergonomic Solutions is willing to actively collaborate with students on this project proposal. Angela Budd is the designated contact point, and the students may be expected to enter into an active dialog with the cross-departmental 'Green Team' that is being established at the company. Note: Knowledge of Danish is NOT a prerequisite for collaborating with the company, as the working language is English.
Ideas for data collection/field studies (please also indicate if financial support has been obtained): As stated in the company description, the company has its manufacturing base in Aalborg itself providing easy reach data collection opportunities e.g. interviews with company staff at this location.
Examples of relevant literature: A great place to start is the book Tools for Sustainable Development
Project proposed by: A.B and D.C.

EXAMPLE 4:

Theme: Sustainable Business Development
<p>Brief description of project idea:</p> <p>The Network for Sustainable Business Development is a forum where corporate sustainability efforts can be developed to benefit the companies' internal organizational activities as well as their relations to customers and suppliers. Networking will help meet both the companies' own sustainability targets and work towards meeting the goals set forth in the Aalborg Municipality Sustainability Strategy.</p> <p>Network for Sustainable Business Development will work to strengthen the participating companies' competitiveness through targeted efforts towards environmental and energy sustainability.</p> <p>Within the project, different objectives and opportunities can be defined. You may work at a network level and research in which ways a network such as this contribute towards sustainable development, how it is organized and how diverse, individual goals become institutionalized as Network goals.</p> <p>You may also team up with one or more of the member organisations and work with them on defined projects that may include but is not limited to Carbon Footprints, Product Life Cycle Assessment, implementation of CSR/Environmental Management, etc.</p>
Examples of research questions:
<p>Examples of relevant methods or theories/theoretical approaches:</p> <p>CSR and environmental management; Stakeholder Theory; Impact Assessment; Triple-Helix</p>
<p>Collaboration with other organisations (if any):</p> <p>Network for Sustainable Business Development, Aalborg Municipality</p> <p>Network members include besides the municipalities of Aalborg and Hjørring, companies like Siemens, Port of Aalborg, Barsmark, Fibertex, Royal Greenland, Gabriel. Collaboration with all organisations is a possibility.</p>
<p>Ideas for data collection/field studies (please also indicate if financial support has been obtained):</p> <p>Quantitative and qualitative data collection can be foreseen but depend on concrete project.</p>
<p>Examples of relevant literature:</p> <p>Facilitating Sustainable Innovation through Collaboration: A Multi-Stakeholder Approach (http://www.springerlink.com/content/978-90-481-3159-4#section=692304&page=1; online access); See also compendium...</p>
<p>Project proposed by:</p> <p>M.D, M.B., M.L., H.R. AND A.R.</p>

EXAMPLE 5:

<p>Theme: <i>Climate Change</i></p> <p>Theoretical approaches to the understanding of Climate Change adaptation by local communities. Interactions organizations and institutions in response to climate change.</p>
<p>Brief description of project idea:</p> <p>The Danish Institute for International Studies (DIIS) will start the project Rural Institutions and Climate Change. The project will run in between 2012 and 2016. The focus is on the “Meso-level” institutions. The students could either look into these, or they could examine how communities interact with them in relation to climate change. Students can undertake a revision on different concepts referring on Climate Change in reference to the issue of how institutions change and “act” – it will be valuable if students undertake a case study to analyze on. (full research proposal attached)</p>
<p>Examples of research questions:</p> <p>Refer to broad research proposal prepared by DIIS</p> <ul style="list-style-type: none"> - -What are the processes and drivers of meso-level institutional change/lack of change in response to CC? - What are the impacts of meso-level institutional change (or lack thereof) on rural adaptation?
<p>Examples of relevant methods or theories/theoretical approaches:</p> <p>Organizational change Stakeholder analysis</p>
<p>Collaboration with other organisations (if any):</p> <p>Danish Institute for International Studies/ Natural Resources and Poverty Unit Contact person: Mikkel Funder http://www.diis.dk/sw37225.asp ; mfu@diis.dk ; tel. 3269 8697</p>
<p>Ideas for data collection/field studies (please also indicate if financial support has been obtained):</p>
<p>Examples of relevant literature:</p> <p>Mikkel Funder, Jacob Fjalland, Helle Munk Ravnborg and Henrik Egelyng. 2009. <i>Low Carbon Development and Poverty Alleviation; Options for development cooperation in energy, agriculture and forestry</i>. DIIS Report 2009:20. Copenhagen: Danish institute for International Studies. Available at: http://www.diis.dk/graphics/Publications/Reports2009/DIIS_Report_2009-20_Low_Carbon_Development_and_Poverty_Alleviation.pdf</p>
<p>Project proposed by:</p> <p>R.R.H.</p>

EXAMPLE 6:

Theme: <i>Climate Change</i> Organisation of a Climate Change planning process
Brief description of project idea: Municipalities in Denmark, and also elsewhere in the world, conduct climate change plans in order to either diminish carbon emissions or adapt to the changing climate. They do this without any national requirements or guidelines. In order to implement these plans in practice involvement of a various number of different sectors is needed. These sectors might involve people from sewer supply department, heat department, nature and environment department, urban planning department, business department etc. However, also external for the municipality, involving private businesses, energy companies, citizens in general, and also funding possibilities to carry out certain projects. This process is cross-sectorial in the widest extent and a process the municipalities are not accustomed to. It is a huge challenge for them, however also a great opportunity for the municipalities to coordinate their different plans and efforts in general. The challenge lies within the organizational structure with division of labor and tasks, but also in existing norms and cultural understanding of how things should be done, which often are different from one department to another. It is also possible to broaden the scope and include the institutional setting; Ministry of Climate and Energy, and the EU.
Examples of research questions: <ul style="list-style-type: none"> - Why do the municipalities think it is important to conduct climate change plans? - How do the municipalities perceive climate change as a planning area? - How do municipalities try to solve the challenge of cross-cutting coordination within in climate change planning? - What are the organisational needs to meet the demands for carrying out climate change plans in practice?
Examples of relevant methods or theories/theoretical approaches: Case study based on interviews is the obvious method here to gain in depth knowledge of their challenges and how they try to solve them. If you choose a case outside Denmark, it is possible, just carry in mind how you would like to collect data. Theoretical aspects might be: organisational theory, leadership management, multi-level governance, acting in institutional void Your theoretical approach can be how strategic planning in a very broad extent is challenged in old bureaucratic organisations and how it might be possible to use this challenge to develop the organisation positively and initiate growth in the municipal region.
Collaboration with other organisations (if any): Contacts can be made to Aalborg and Århus Municipality, however several municipalities will be willing to work with you.
Ideas for data collection/field studies (please also indicate if financial support has been obtained): Semi-structured interviews, focus group interviews, telephone interviews
Examples of relevant literature: "The politics of climate change" Anthony Giddens "Planning for climate change" Davoudi, Crawford and Mehmood "Institutional environments and organisations" Scott and Meyer "The rise and fall of strategic planning" Mintzberg
Project proposed by: A.W.

EXAMPLE 7:

Theme: <i>Biodiversity</i> Planet Randers – a biodiversity project in a corporate and experience economy setting
Brief description of project idea: Planet Randers is a DKK 12 million development project with an overall budget of DKK 1.6 billion. The two most relevant aspects of Planet Randers are: <ul style="list-style-type: none"> • The 750 hectare Nature Park Gudenå: enabling the visitor to travel through prehistoric time to a possible future to experience the flora and fauna of Denmark in a living gene-bank containing wild Danish animals, original crops and livestock threatened by extinction. • Ecological Innovation: Promoting biodiversity through the establishment of industrial partnerships between research institutions, industry, public institutions and professional organisations, science and business clusters make for platforms for sustainable innovation within sectors of food-industry as well as experience economy (tourism). The project involves several multinationals from the primary sector.
Examples of research questions: <ul style="list-style-type: none"> • What could a triple-helix model add to the sustainable use of biodiversity and genetic resources? • Approaches to the Overcoming the Biodiversity Squeeze: Is an Experience-Economical approach the way forward? • Business actions for biodiversity – how can business make sense of complexity and strengthen its sustainability (CSR) profile?
Examples of relevant methods or theories/theoretical approaches: CSR, stakeholder theory, ecosystem analysis, biodiversity indicators etc.
Collaboration with other organisations (if any): Randers Municipality, industries and business associations in primary sector
Ideas for data collection/field studies (please also indicate if financial support has been obtained): Interviews with stakeholders covering both business, authority and NGO perspectives
Examples of relevant literature: http://projekter.aau.dk/projekter/da/studentthesis/is-biodiversity-business-of-business(f25f12bd-9a9e-4267-8d36-af658f1f6ee6).html http://www.teebweb.org/ForBusiness/TEEBforBusinessDraftChapters/tabid/29434/Default.aspx http://www.wbcds.org/templates/TemplateWBCSD5/layout.asp?type=p&MenuId=MTc3Ng&doOpen=1&ClickMenu=LeftMenu http://di.dk/Marked/CSR/csrnyheder/Pages/Erhvervslivogbiodiversitet.aspx (in Danish) compendium.
Project proposed by: K.K., H.R. AND M.L.

3 Appendix: Semester descriptions of Study Programmes

3.1 Template – Aalborg University⁴

Semester description

Semester details School: Study board: Study regulations:
Semester framework theme <i>This should include an elaborated description in a prose form of the focus of the semester, activities implemented to fulfil the competence objectives and the thematic(s) of the semester. In other words, the semester description includes the “framework theme” that the students will be exposed to during the semester. The role of the semester and its contribution to students’ academic progression should also be described.</i>
Semester organisation and time schedule <i>This must be a short description of the different activities of the semester, their mutual connections and the way in which they support each other and also support students in reaching their goals; such activities may be study trips, internship periods, project modules, course modules, including laboratory activities, cooperation with external stakeholders, possible cross-disciplinary cooperation relations, and guest lectures and other events.</i>
Semester coordinator and secretariat assistance <i>Names of anchor-person (teaching staff), course coordinator, semester coordinator (or similar title) and secretariat assistance provider(s)</i>

⁴ http://www.kvalitetssikring.aau.dk/digitalAssets/95/95117_skabelon-semesterbeskrivelser---engelsk-udgave.pdf

3.2 Examples semester descriptions

In this section, you can find examples of semester descriptions, as used at, Aalborg University (Denmark)

Example 1 “Urban Management and Planning, 3rd semester

Semester details

School: School of Architecture, Design and Planning

Study board: Planning and Geography

Study regulations: Curriculum for the Master’s Programme in Urban, Energy and Environmental Planning

Semester code and study regulations code: IOU990001/IOU70103

Semester framework theme: Internship · Project · Stay Abroad · Long Thesis

The subject of the semester is optional, and there are several possibilities for the student at this semester. The student can choose among the following possibilities:

- **Internship Semester (Project Internship)**

The students can apply to get into internship either abroad or in his native country. For each intern individual learning goals have to be drawn up, which clearly reflect both the professional problem to be pursued and the organisational and cultural context in which it is exercised. The internship semester is reported through an article dealing with a subject that the student has been working with and that is part of the above-mentioned learning goals. It should be noted that the programme normally is unable to facilitate contacts with employers but it can be a good idea to read the evaluation of previous students’ internship at the webpage of the international office.

- **Stay Abroad (International or National crediting)**

After prior approval by the Study Board the 3rd semester can be undertaken at another educational institution. It shall be possible to credit teaching and stay entirely or partially in relation to the planning education at Aalborg University. It is preferred that the stay abroad takes place through established Erasmus programmes, Nordregio co-operation or other mutual exchange agreements. Students are requested to prepare an evaluation for the international office providing miscellaneous practical information for the benefit of other students.

- **Normal Course (Project Semester)**

The students can choose to follow the 3rd semester project unit followed by a 4th semester final thesis. Students who wish to enhance further their methodical and theoretical skills are advised to utilize this mode.

- **Long Thesis**

The students can choose to undertake the 3rd and 4th semesters as one long thesis/dissertation project, cf. the common regulations for the educations in engineering. This option is especially feasible when students work with topics which require extraordinary data collection.

In light of the high extent of freedom of choice at the semester, it is the goal of the semester that the student shares the responsibility for his own professional learning through his project choice and the undertaking of the semester, thus contributing to the development of his personal professional profile.

It is recommended to choose a professional focus complementing the projects and results achieved at the 1st and 2nd semesters. The 3rd semester project in this way contributes to completing an independent technical and professional profile for the individual student.

The late semester sets the stage for working with in-depth assessments of the consequences of

planning within physical planning and urban development and/or in connection with environmental urban development problems - either in a broad, interdisciplinary sense or in a more limited “urban planning and management” context. It is recommended to develop the ability of synthesizing, formulation of alternative possibilities of action and/or assessment of consequences based on empirical analyses, or to undertake examination of assessment and evaluation results within the chosen problematic.

Semester organisation and time schedule

The semester is organised around individual-based internship, project work, courses, or long thesis. As the scope of the 3rd semester is quite broad, the students should declare their interests and professional focus to the semester coordinator well before the summer vacation. In this way optimum professional supervision will be sought ensured in relation to the wishes of the students. It is recommended that the supervisors are involved systematically already from the start of the project work and further through problem identification, choice of methods as well as in the preparation of work and time schedules.

Important dates:

Semester start: xxx (No starting seminar will be arranged)

Allocation of supervisor: No later than 1st of July assuming you have a placement and an idea of your work tasks at this point. It could be of great use to meet your supervisor before your departure to facilitate subsequent communication.

Individual Framework Agreement: Two weeks after your internship starts you have to make an Individual Framework Agreement together with your contact person at the site and your AAU supervisor (only apply for interns).

Final Thesis Notification: xxx.

Project submission: xxx.

Evaluation: xxx

Semester coordinator and secretariat assistance

Semester coordinator: E.L. xxx@plan.aau.dk,

Study secretary: D.H yyy@plan.aau.dk,

Study Board secretary: A.H. zzz@plan.aau.dk,

Example 2: Cities and Sustainability, 1st semester Aalborg University (Denmark)

Semester details

School: School of Architecture, Design and Planning

Study board: Planning and Geography

Study regulations: Curriculum for the Master's Programme in Joint European Master in Environmental Studies – Cities and Sustainability

Semester code and study regulations code: IOK770001/IOK70141

Semester framework theme: Cities and Sustainability in a Management Perspective

The study project addresses the theme “Cities and Sustainability in a Management Perspective”, with a professional focus on ‘Smart Cities & Communities’, and thereby preparation of suggestions to sustainable management, planning improvements and transitions in the ‘smart city’ context.

Cities play a vital role in the social and economic development of regions and countries. Dynamically efficient and productive cities are essential for economic growth and strong urban economies are vital for generating the resources needed for public and private investments in infrastructure, education and health, improved living conditions, and poverty alleviation. However, especially, urban social and environmental problems related to city growth are serious threats to the full realisation of the socio-economic contribution, which cities can make. Since more than half of the world population lives in urban areas and an increasing part of them in cities, the problem of sustainable development is accentuated in the process of city growth. The question if sustainable development is possible will largely be answered in cities.

Challenges

Most of the existing systems and processes to reach for example low- or post-carbon cities are sector-based, and previous efforts to scale up from the building level to the district/city level have faced significant barriers that are technical, social, institutional, behavioural, political, and economic in nature. Additionally, the lack of an integrated and open architecture inhibits rapid spread of successful solutions. In the energy sector, 100% renewable power systems are technically feasible today. The main barriers for realisation are institutional and political in nature. Similarly, in the mobility sector it is clear that significant changes in behaviour and urban structure are necessary to realize zero-carbon transport systems, but existing political, economic, and spatial structures inhibit leap changes in efficiency and carbon intensity.

Residential, commercial, and industrial firm location decisions, along with the existing urban structure, have strong effects on transport mode choice, which in turn effects carbon emissions. Energy systems and transport systems exhibit path dependent characteristics, making them resistant to short-term changes in technology, prices, and changes in consumer/producer behaviour. Fuel substitution in the transport sector (biofuels, electricity, hydrogen, etc.) will not have the desired effects unless they are accompanied by significant reductions in the total size of the urbanized area.

In the realm of ICT, most municipal and regional databases are currently not able to handle the surge of data that is flowing in from all structured and unstructured data streams (energy flows, WiFi, Bluetooth, mobile devices, traffic counting stations, Near Field Communication, video cameras, etc.). System integration, data security, data privacy, storage, and real-time analytics are massive challenges, and one that most existing municipalities have only begun to address.

Finally, knowledge transfer and policy learning (in the form of best practices, for example) has been shown to be one of the worst ways of encouraging rapid uptake of successful practices. Learning from failures is far better, but cities are understandably reluctant to highlight where things go wrong. Therefore, many cities around the world keep making the same mistakes over and over.

Response

"Smart cities should be regarded as systems of people interacting with and using flows of energy, materials, services and financing to catalyse sustainable economic development, resilience, and high quality of life; these flows and interactions become smart through making strategic use of information and communication infrastructure and services in a process of transparent urban planning and management that is responsive to the social and economic needs of society." (EIP, 2013: 5)

The aim of this semester is to introduce students to the complexity of urban development, and to the tools and methods available to address its (un)sustainability. Providing the knowledge base necessary to take conscious steps towards a smart urban future requires the integration of knowledge from a number of fields. The project work and courses on the semester are designed to facilitate students to understand the complexity and scale of the challenges, and to contribute to the development of skills and competences necessary for future realisation of Smart Cities.

Specifically, the semester aims to

- (1) Contribute to the understanding of and skills to use models and tools for the early phase planning process that may contribute to secure the fulfilment of ambitious goals;
- (2) Contribute to knowledge about concepts for buildings, energy supply, infrastructure and urban fabric, transport and ICT that support smart districts; and
- (3) Contribute to the development of knowledge and understanding of the cultural changes that are necessary in order to achieve smart cities, as well as to the skills and competences necessary to see these changes through

Semester organisation and time schedule

The semester is composed of one 15 ECTS project and three courses of 5 ECTS. These courses are:

- Tools and Systems for Sustainable Development (TSSD)
- Complexities, Interrelationships, Synergies and Conflicts (CISC)
- Theories of Science and Research Designs (TSRD)

The three courses will support you in your project work and give you tools for subsequent projects, learning and knowledge development.

Important dates of the semester: xxx

Project module

The project module will be undertaken in groups. Each group comprises three to five students and work on a self-selected topic supervised by faculty throughout the semester. It is expected that students elaborate a problem analysis for the project work within the theme of 'The Smart City'.

In order to make newly started Master students coming from institutions other than AAU prepared to enter the problem based learning environment and manage study projects in close collaboration with peers, three half-day workshops on 'Problem based learning and project management' will be organized in the beginning of the semester. After the introduction period at the beginning, groups will be formed for the remainder of the semester. Students will be working in groups for the project as well as for the courses. There will be two seminars (Project Design Workshop, and Group Finalisation) assisted by the semester/programme coordinator to facilitate group formation and selection of project topics. By the end of the two seminars, all students must have formed project groups and made a choice of project, e.g. described the topic of the project and worked out a preliminary identification of a specific problem, challenge or opportunity. Supervisors will be assigned as soon as possible during this process or immediately after. The actual project work will start hereafter. The project group will contact their appointed supervisor, and the supervisor will help the group to discuss further, how the topic chosen, and the preliminary identification of a specific problem, challenge or opportunity, can be developed and function as basis for the project work of the group.

It is common that you will encounter problems of various kinds during the research project. On-going interaction with fellow students, lecturers and supervisors will provide valuable feedback and problem-solving opportunities. Throughout the semester, there will be two half-day project status seminars for the groups of the semester, with brief project presentations followed by feedback and discussion about each group's project.

Course modules

The course module Theories of Science and Research Design has the intent of equipping students with knowledge and tools that facilitates and improves the scientific standard of the research and projects in the master's programs. The course will provide the students with knowledge of the history and development of knowledge production in relation to philosophy and theory of science. It will also introduce a range of research methods, approaches to research and ways of carrying out data analysis.

The course module Tools and Systems for Sustainable Development will focus on providing the students with a thorough understanding of organisations and of the managerial and strategic implications of the environmental and social challenges they face. The course will approach management in a company perspective but the same tools and systems can be applied to other organisations. The course will explain various management philosophies and tools that firms can apply in order to measure, assess, and communicate environmentally and socially responsible performance and thus enhance competitiveness.

The course module *Complexity, Interrelationships, Synergies and Conflicts* will introduce the students to concepts, theories and models concerning cities as complex systems where a number of different contexts, structures, changes and situations influence each other mutually. This module will also include a one week long Urban Design Studio and assignments in the weeks after.

Steering group meetings

During the semester, three steering group meetings will be held. These meetings will provide opportunity to update on how the projects are proceeding and to raise any common issues that need to be discussed.

Practicality

Moodle

In general, students and staff are all expected to use the CiSu1 Moodle page as their main gateway and source of information concerning the semester: <https://www.moodle.aau.dk/> Check this regularly and preferably every day.

Computer Facilities

In general, there are no common computer rooms available at our department. A limited number of stationary computers are available at the various locations of Aalborg University Library. Information regarding username and password should be given to you upon arrival. See also <http://www.its.aau.dk/>. The local computer support unit is located in room A225 at Strandvejen 12-14 (opening hours weekdays 10.00 to 12.30 and 13.00 to 14.30). The computer support can be contacted on xxx@its.aau.dk.

The University Bookshop

The downtown branch of the University bookshop is located at Strandvejen 12-14. Books required for the courses can be acquired here.

The Library

The main library is located at Langagervej 2. A sub-section of the main library is located at Strandvejen 12-14. Your student card works as your library card. More information can be found here: <http://www.en.aub.aau.dk/>

Other Facilities

Copying: A system using your AAU student card has been taken into use.

Printing: A system using your AAU student card has been taken into use. For guides on how to access the printers go to <http://www.printcopy.aau.dk/>

E-mail: It is a requirement that you use your AAU student e-mail. Important messages will be sent to your AAU student e-mail. We will not keep track of other e-mail addresses you wish to use. Please check your e-mail daily.

Website: Course information, schedule etc. are available from link to CiSu1 Moodle page. Please check this website daily.

Group Rooms: The group rooms available for you will be announced shortly after the start of the semester. The group rooms will be notified on Moodle.

Semester coordinator and secretariat assistance

M. L. (semester coordinator and programme director for CiSu), xxx@plan.aau.dk

D.H. (study secretary for CiSu), xx@plan.aau.dk

Study Board secretary: A. H. yy@plan.aau.dk

4 Appendix: Learning Agreement

Learning Agreement between

Study Board for Planning & Geography, Aalborg University, Denmark; [Insert University Name] and [Insert Student Name] on:

[Insert Project Name]

Framework and contents for project

Student:

[Insert Student Name]

Semester:

[insert name of semester]

Period:

[Insert Study Period]

Supervisor/University Contacts:

[Insert Supervisor Name], [Insert University Name] (Host)

Host University and Study Programme:

[Insert University Name] and [Insert Programme Name]. The project requires self-study time of 450 hours in total or the equivalent of 15 ECTS.

For the Programme, date:

For [Insert University Name], date:

[Insert name]
Programme Coordinator,

[Insert Signatory]
[Title]

For Aalborg University, date:

Supervisor, date:

[insert name]
Head of Study Board

[Insert Supervisor Name]
[Title]

Student, date:

[Insert Student Name]

Tasks

[Insert short description of the research project and tasks]

The precise extent and contents of the main task as well as other work tasks may be adjusted during the course of the exchange.

Objectives and outcome

The primary objective of the exchange will be for the student to acquire more extensive research skills, including research design and data collection, coding, and analysis techniques using qualitative and/or quantitative analytic tools.

[INSERT ADDITIONAL/MORE SPECIFIC OBJECTIVES IF APPLICABLE]

The main task described above and possible other tasks will together comprise the written report, which will be submitted and evaluated at the end of the exchange period. Upon completion of the project, the student is expected to have acquired an ability to critically assess:

- [INSERT MORE SPECIFIC OUTCOMES IF APPLICABLE]

Additionally, the student is expected to be able to:

- Reflect on her/his own learning over the course of the project
- Give an account of experience with practical work processes and methods of work in the field, and to be able to perform a critical evaluation of the adequacy of the applied work processes

Learning Goals

Students who complete the module are expected to obtain the following:

Knowledge

- Must within a chosen part of his/her field have knowledge at the highest level of international research
- Must understand and relate critically to the area's knowledge and must be able to identify either scientific or practical problem areas in a given context

Skills

- Must master the area's scientific methods and tools as well as master general skills linked to solving the chosen problem
- Must be able to assess and choose between the field's scientific methods, tools and general skills as well as establish new analytical and problem solving models
- Must be able to discuss professional and scientific issues with peers as well as non-specialists

Competences

- Must be able to control work and development situations that are complex, unpredictable and require new methods of solving
- Must independently be able to start and carry out professional and interdisciplinary cooperation and assume professional responsibility
- Must independently be able to assume responsibility of own professional development and specialization

Evaluation: [Insert Evaluation Format]

For the programme, date:

For [Insert University Name], date:

[Insert name]
Programme Coordinator, JEMES CiSu

[Insert Signatory]

For Aalborg University, date:

Supervisor, date:

[Insert name]
Head of Study Board

[Insert Supervisor Name]
[Title]

Student, date:

[Insert Student Name]

5 Appendix: Module description

5.1 Template module description Aalborg University⁵

Module description (description of each module)

Module title, ECTS credits (and possibly STADS code) <i>Danish and English title</i> <i>X ECTS</i>
Location <i>X semester</i>
Module coordinator <i>The academic staff member responsible for the organisation and execution of the module.</i> <i>The module leader may be the same person as the semester coordinator.</i>
Type and language <i>Module type (e.g. study subject module, course module, project module etc.)</i> <i>Language of instruction</i>
Objectives <i>Description of the content and the objectives of the course as regards learning objectives of the students in the module. This comprises a transcript of the knowledge, skills and competences described in the study regulations and curriculum.</i> <i>If agreed by the study board, this may also comprise:</i> <ul style="list-style-type: none"> <i>A brief description of the methodological and practical knowledge and capabilities that students will achieve</i> <i>Indication of the course activities in subsequent semesters which the module supports</i>
Academic content and conjunction with other modules/semesters <i>A brief and general description of the academic content of the module as well as the basis and motivation for the module; i.e. a brief review of the content and foundation of the module.</i> <i>The intention is to provide students with an overview of each module and to create understanding of the module in relation to the semester and the entire programme.</i>
Scope and expected performance <i>The expected scope of the module in terms of ECTS load. This comprises the number of teaching hours, exercises, preparation time, travel activity (if applicable) etc.</i>
Participants <i>Indication of the participants in the module, particularly if they include several year groups, programmes or</i>

⁵ http://www.kvalitetssikring.aau.dk/digitalAssets/95/95117_skabelon-semesterbeskrivelser---engelsk-udgave.pdf

another type of co-teaching.

If agreed by the study board, this may be omitted

Prerequisites for participation

Description of the prerequisites for student's participation in the course, i.e. previous modules/courses in other semesters etc. The overall intention is to emphasise the coherence of the programme. This may be a transcript of the text in the study regulations and curriculum.

If agreed by the study board, this may be omitted.

Module activities (course sessions etc.)

For each teaching activity (course session, workshop session etc.) the following must be indicated:

- *Type of teaching (lecture, workshop, laboratory work, study trip etc.)*
- *The title and number of the teaching activity (in that order) and possibly a brief description of the activity (course introduction)*
- *Date of the activity*
- *Lecturer(s)*
- *Set and recommended readings*
- *Slides and other resources*

If agreed by the study board, this may be omitted.

Examination

Transcript and possible clarification of the description of examination and assessment from the study regulations and curriculum, possibly including:

- *Relevant evaluation criteria in the assessment*
- *Link to examination plan (when available)*

If agreed by the study board, this may be omitted.

5.2 Examples module description:

Example 1: Urban Management and Planning, 3rd semester Aalborg University (Denmark)

Module title, ECTS credits and STADS code Internship · Project · Stay Abroad · Long Thesis 30 ECTS Activity code: IOU990005P
Location 3 rd semester of Urban Planning and Management Study board for Planning and Geography
Module coordinator Mrs XXX
Type and language Module type: project module Language of instruction: English
Objectives For internship and project semester: Students completing the project module acquire the following: <i>Knowledge:</i> <ul style="list-style-type: none"> • Must within the chosen part of his/her field have knowledge based on the highest international research • Must be able to understand and relate critically to the knowledge of the field and be able to identify either scientific problems or practical problems in a given complex context. <i>Skills:</i> <ul style="list-style-type: none"> • Can master the scientific methods and tools of the field as well as general skills in relation to the solution of the chosen problem • Can assess and choose among the scientific methods, tools and general skills of the field and draw up new models of analysis and solution • Can discuss professional and scientific problems with both colleagues and non-specialists. <i>Competences:</i> <ul style="list-style-type: none"> • Able to manage work and development situations which are complex, unpredictable and require new solution models • Able to independently start and carry through professional and interdisciplinary cooperation and take a professional responsibility • Able to independently take responsibility for own professional development and specialisation. For long thesis: Students completing the project module acquire the following: <i>Knowledge:</i> <ul style="list-style-type: none"> • Thorough knowledge of relevant theories and methods in relation to the chosen problem and can reflect on them • Can describe the used theory (or theories) so that the special characteristics of the theory are brought to light and in this way document understanding of the possibilities and limitations of the used theory(ies) within the concerned field of problems • Have knowledge of the scientific-theoretical and methodical embeddedness of the used theories and can reflect on them

- Have thorough knowledge of the research embeddedness of the chosen problem, including knowledge of the most important national and international research in the field.

Skills:

- Are independently able to plan and carry through a project course at a high professional level
- Can give an account of possible methods for solution of the problem formulation of the project and describe and assess the suitability of the chosen method, including an account of chosen limitations and their importance to the results of the product
- Can give an account of the relevance to the education of the chosen problem, including a precise account of the core of the problem and the professional context
- Can analyse and describe the chosen problem by using relevant theories and empirical investigations
- Can analyse and assess the results of empirical investigations, whether it is the student's own investigations or those of others, including an assessment of the importance of the investigation methods to the validity of the results
- Can point out relevant future strategies, possibilities of change and/or solution proposals
- Can impart knowledge of the problem to both professionals and non-professionals.

Competences:

- Can form a synthesis between the professional problem, theoretical and empirical investigations and make a critical assessment of the synthesis formed and the other results of the project work
- Can independently, on the basis of the acquired problem, be part of interdisciplinary discussions and development work
- Can independently acquire the newest knowledge in the field and are on this background capable of continuously developing the professional skills and competences.

Academic content and basis

1. Project semester at Aalborg University

Well before the summer holiday all students must have indicated their professional interest/project subject. Before the summer holiday the student will be allocated a supervisor for the project and not later than two weeks after semester start the student must have prepared a project proposal, which has to be approved by the supervisor.

The project work can be based on urban planning, environmental and/or mobility problems, which for example elaborate themes dealt with earlier during the M.Sc. study. They may be of overall, policy or conceptual nature, but can also have more specific planning or project character. For example, the project may focus on analysing planning and regulation systems with a view to assess the relation between local (municipal, regional, national) planning problems and planning systems; between sectoral planning and comprehensive planning; or comparative analyses of planning and regulation systems in Europe or elsewhere.

In the project, which can either be based on the students' work at the 1st and 2nd semesters, on a specific project/plan or an independent problem, a thorough and integrated approach has to be applied by using methods, models and theories relevant for the problem and professional field, including a critical assessment of the possibilities and limitations of the applied methods. Alternative courses of action or solutions based on analysis and consequence assessments concerning the social framework conditions will also have to be addressed in the project.

Students who wish to further develop and enhance their methodical and theoretical skills in preparation for their thesis project are advised to choose this option. The students must hand in an academic paper concerning the chosen subject.

1.1 Examples of projects

As mentioned, projects may optionally be chosen at levels ranging from the local to the transnational. Moreover, the projects may be prepared with different professional focus. In principle, the choice of project subject is thus free in the same way as at the 4th semester. Below some examples of projects

undertaken earlier years are indicated.

Local level:

- Collaborative planning in legislation and practice: Based on case studies from Copenhagen, Aarhus and Aalborg
The purpose of this project is to investigate how Patsy Healey's idea of collaborative planning is used in the Danish Planning Act and implemented in practice. The project will link both theoretical and empirical types of analysis. The report has two substantive parts. Theoretical analysis covers collaborative planning and the Danish Planning Act as a context for empirical analysis. Empirical analysis is exercised through case studies from the Copenhagen, Aarhus and Aalborg municipalities. One of the keywords in collaborative planning is public participation, a phrase that is also emphasised in the Danish Planning Act. Assessment of the three case studies will demonstrate the degree to which this idea has been successfully implemented. The report concludes that it is actually easier to put the idea of collaborative planning into practice than it is to set it against the framework of the law.
- Upgradation of urban core: A case study of Kathmandu Metropolitan City
The issue of livability of urban core is the growing problem in the developing countries like Nepal. The inquisitiveness that has developed this research is that what the key factors are affecting livability of a city and how livability relates to sustainability. A general study has been made of what are the livability issues for the sustainable development of the urban core by encouraging the local communities. Case study of Bhaktapur Development Project of Nepal was made because it is the only completed projects that have been carried on with the consideration of the living conditions of the inhabitants. The model of Venice Renewal has been studied because it is considered one of the best-practiced renewal projects in the world and that it exemplifies the concept of gentle urban renewal keeping the owners and tenants in the foreground. The case of Vesterbro, Copenhagen has been inspiring developing physical development plan. Recommendations are given as reflection to the literature review made; cases studied and the existing study of the site.
- Investigation of Reykjavik's public spaces
The purpose of this report is to explain the interrelation between economic competence and quality of public space, in the city of Reykjavik, Iceland. This report presents an evaluation of the quality of selected public spaces in Icelandic capital. A framework for analysing the public space is based on Gehl's work. The analysis of the public spaces has revealed that even though there are some good elements in urban environment in Reykjavik, in general, quality is lacking. At the end of this report some practical recommendations are given for how the quality of public space could be improved. This eventually leads to more general recommendations how the improvements in public space could help the economic competence of Reykjavik.

National level:

- Land use changes in urban fringes: Looking through food security perspectives
For a country like Nepal, where due to the geographic terrain constrains, the existing limited flat agricultural lands are of utmost importance. The importance of agricultural land is also related with the fact, that majority of people of Nepal are still dependent on the agricultural based economy. However, on the other hand the prime agricultural lands of the country mainly the Kathmandu valley, which produced the staple food, is decreasing at the cost of urban growth. With more than 1.5 million people living, Kathmandu valley is the most important urban centre and the historical settlement of Nepal. Religious and social manifestation was the part of legal land use zoning in traditional urban form of Kathmandu valley, which emphasized the compact growth in order to preserve and protect the agricultural hinterlands of the valley. But in contrary to this, the on-going urbanization has affected on the most of the urban fringes of the valley decreasing the local food supply, in which the case of Harisidhi and Imadole has been studied in detail in the report. The availability issues in terms of local staple food production within the valley, relating its major importance in the historical perspectives and the on-going urbanization, are studied, to explore to the issue of food security in context of Kathmandu valley.

Transnational level:

- 'Travelling Circus'. Polycentric capital of Europe and the environment
The case is based in the context of growing environmental movement. EU seeks to lead the climate change policy and be the first to employ environment saving technologies. From the surface it looks like that we (Europeans) are good at it, but in the core of the EU there is something wrong. The fact that European Parliament (EP) has three places of work and two Parliament buildings in two cities 450 kilometres apart is nothing exciting. Not until numbers starts to speak: Parliament building in Strasbourg stands empty for 317 days a year. Further, maintenance of two seats for the Parliament costs tax payers 200,000,000 Euro each year and emits additional 20,000 tons of CO₂. It does not sound frightening bearing in mind the fact that small country like Lithuania emits 1000 times more CO₂ a year. On the other hand, it could be avoided if EP would stay only in Brussels. This report tries to look at the issue from the perspective of urban planning. The main theory to this end employed in the report is spatial planning. The report tries to look to what extent polycentric structure of EU headquarters is in line with environmental policy of EU and to report to some extent the power relations.

2. Internship

Placing the internship at the 3rd semester makes it possible to practice the use of methods and professional competences from the 1st and 2nd semesters of the education. At the same time, it gives an opportunity to learn how professional planning is working in practice.

The internship usually comprises one semester and has a practical length of about three months in a private enterprise or a public authority. The rest of the semester is used for preparation of a project article and examination. It is emphasized that this mode is part of the student's learning process. Thus, the internship will normally be centred on a professional subject or problem that is investigated and assessed on the basis of the practice in the field of the internship site. During and after the internship an academic paper will be prepared concerning one of the subjects that the student has been working with during the internship. Internship projects will usually be individual. A supervisor from the university is assigned, but it is important that a contact person from the internship site is identified, from whom the student can get support. The contact person does not participate in the evaluation of the project. The internship may take place in Denmark or abroad. In connection with an internship abroad it is possible to apply for financial support for travel and stay through the university's International Office and other funding.

An internship builds on a formalized Internship Agreement, which is entered between the internship site, the student and the study programme. The planning of the 3rd semester begins with a kick-off seminar to be arranged in the beginning of February the same year and a follow up article and question seminar in May. Regarding preparation of the internship it is necessary that the student(s) consult(s) the semester coordinator before the internship is planned in detail. This will imply contact before the end of the preceding semester.

In practice, the student takes the initiative for an internship. The student identifies – either himself or in co-operation with the internship coordinator/supervisor – a desirable and suitable internship with whom the framework and contents of the internship period is agreed. The tasks and learning goals have to be described in a short Individual Framework Agreement that has to be completed two weeks after the beginning of the internship. The document states internship period, site, supervisor, contact person, tasks and professional contents as well as individual learning goals. The individual framework description has to be prepared in co-operation with the contact person of the internship site and has to be approved by the academic supervisor. The Individual Framework Agreement is the result of a dialogue between the internship site, the student and the education. It should be in place within the first 2-3 weeks at the site. The initiative lies with the student. For the description of learning goals Bloom's taxonomy has to be used similar to and at level with the descriptions for the 1st and 2nd semesters. It is important that the learning goals are formulated realistically, as they constitute important assessment criteria at the final evaluation.

The internship may be remunerated according to agreement between the student organisations and IDA. The conditions around payment are no concern of the Study Board or the programme.

2.1 Contents and nature of internship

The aim of the internship is to give the student practical experience in the solution of professional planning tasks. The internship must have relevance to engineering educations within Urban, Energy and Environmental Planning (physical planning, urban planning and urban development, environmental planning problems, urban management, mobility and transport problems, sector planning or similar). The tasks discharged must be at a professional planning or engineering level and shall comprise independent work processes and problem solving under supervision. Normally, one of the following forms of internship applies:

(1) The student as part of the daily work at the internship site

This may be the practising of already achieved skills or development of new ones, just like the work may be of both an analytical and solution-oriented nature. In this model the student is part of the daily professional practice environment at the internship site. Often the student has more working responsibilities than a single project. Typically the student may (i) participate in the daily course of work at the internship site (participate in meetings, visits outside the house) and (ii) have a couple of bigger tasks at the same time which are handled concurrently. One or more of these tasks form the practical basis for an article in which the student needs to reflect on the subject theoretically. At the end of the semester the student has to submit:

- A professional and academically acceptable article about one or more subject that the student has been working with.

(2) The student as a 'consultant'

Most internship courses will concentrate on data collection and analysis in connection with elucidation, evaluation and development work of some nature in the public or private sector. In this model, the student to a greater extent acts as a consultant for the internship site. The student is expected to undertake a specific and defined project for the internship site and is expected to spend most of the time on this task. Often, it may be in the form of an independent project, where the student looks at a given problem with fresh eyes. At the end of the semester the student has to submit:

- An article using the subject from the task and working with the subject theoretically.

Especially in connection with the first model, where the student is part of the daily work, it has to be ensured that the intern is not involved in too many tasks, for example by reserving one day/week for the academic project.

2.2 Examples of internship projects

- Planning in climate change
I had a split internship between an Australian University and Municipality. At the university I worked with climate change from an academic point of view and my article focused on the gap between academics and practitioners when dealing with climate change.
- Access denied: access to, and activities in public and private spaces
I had an internship at a private consultancy company in Australia. Two of the projects I worked on were a gated community for retirement houses and a shopping centre where young people weren't allowed access due to often encounter unwanted interactions with security guards in shopping centres. I combined these two subjects in an article about public and private spaces and the boundaries between them.
- Strings of identity between cities and citizens - cultural heritage as history and future
I had a split internship between a Danish consultancy company and Randers Municipality. My main project was to create a master plan for the redevelopment of the Scandia-area in Randers, an old industrial site with a central location. To do this I used the qualities of both private and public planning cultures. One of the challenges was to preserve the old identity of the historic place as well as make room for the future to unfold itself. I used this case in a general article about using identity and cultural heritage as a development strategy for cities and urban areas.

2.3 Supervision, time schedule, and academic article

In connection with internship, a supervisor has to be attached from both the internship site and the university. The supervisor from the internship site must, as a starting point, be responsible for the daily, professional supervision and guidance, while the supervisor from the university is responsible for the more theoretical and methodical approach that also will be expressed through the article. Overlapping supervision may be possible, where it is considered necessary and expedient. The supervisor from the internship site does not participate in the evaluation of the project.

The semester coordinator ensures that there is relevant academic supervision for the single student in practical training. As compared to previous semesters, limited supervision resources are available. Usually the supervision will cover the project start, two supervision meetings including reading of working papers and test (evaluation) of the project. As regards the supervision of the specific professional tasks this is taken care of by the contact person of the internship site.

In connection with internships, the students have a very great responsibility for their own learning. This is due to the fact that the supervision at the internship site normally will be practically oriented rather than academically. Therefore it is up to the single student to reach an adequate methodical and theoretical level in the work. The limited supervision resources require development of the student's ability to work independently. It is therefore recommended that early in the process, a time schedule is prepared, which is harmonized between the internship task, the work situation of the internship site and the academic supervisor.

The article will, as a main rule, be accessible for all in the same way as other project reports. The article is aimed towards the study and the participants in the internship course, primarily the supervisor and the internal examiner. For the sake of the internship site or the specific tasks in which the students are involved underway, it may in some cases be necessary to classify reports or certain appendices as confidential. A model for such a declaration of confidence can be requested from the study secretary.

3. Study abroad (International or national crediting)

If you want to study abroad you need to have your stay approved as part of your education at Aalborg University (qualification). By a qualification you exchange the semester that you were to follow at Aalborg University with a liable period or activities at another university.

You can choose to use one of the exchange agreements that Aalborg University has with another university or you can choose to contact another university by yourself. The advantage in using an exchange agreement is that you in most cases do not have to pay tuition fee. For more information about study abroad and which universities Aalborg University has exchange agreements with, check out the webpage of the international office at: http://www.internationaloffice.aau.dk/study_abroad/.

3.1 Credit

When you, in cooperation with an academic supervisor, have found the study program you wish to follow at the chosen university you have to apply for approval of this from the Study Board so that you can have your credit transferred after your return to Aalborg. Be aware that if you change program or courses during your stay you have to inform the Study Board about this to secure your transfer of credits. Please note that you have to have your stay credited to be able to receive financial support from different subsidy schemes and from the State Education Fund (SU).

Your application to the Study Board about transferring of credit has to include a pretty detailed description of the courses and/or projects that your will follow at the other university and some documentation e.g. the course description from the other university in order to give the Study Board the best way possible to evaluate your application. Remember that your workload has to correspond to 30 ECTS (European Credit Transfer System). Outside Europe these might be called credits or units and have different value. If the application fulfils the demands you will be given a prior recognition. When you return to Aalborg University you have to document to the Study Board that you have followed the chosen activities as well as fulfilled the condition on which you were given the prior recognition. The documentation has to be issued by your host university.

3.2 Time frame

To apply for a study at another university you have to be aware of the deadline for applying. For the fall semester most universities have a deadline for applying from 1st of February to 1st of May; however some universities have a later deadline.

4. Long thesis

Students can choose to undertake the 3rd and 4th semesters as one long thesis/dissertation project, cf. the common regulations for the educations in engineering. This option is especially feasible when students work with topics, which require extraordinary data collection. The expectations of an extended Master's thesis are significantly higher than for a normal one semester Master's thesis. In addition, one year of individual problem-based research is a long time, particularly if the student does not have substantial experience with this form of work. Therefore, the group of supervisors advises against this option if you are only taking the master's programme at AAU.

The main objective of the project unit is to document that the student is capable of independently planning and completing a project phase at a high disciplinary level. The project must prove the student's ability to apply scientific theories and methods at a sufficiently high level. The Master's thesis should thus be structured so as to prove that the objectives of the programme have been met. The Master's thesis will naturally be a continuation of project work in previous semesters and may comprise problems within the entire curriculum of the programme.

The focus of the Master's thesis is often on a specific research challenge, 'idea' or case of urban planning and management. For instance, it can be related to a specific topic (such as CO₂-free cities, future urban mobilities, etc.), a specific theory (splintering cities, participatory governance, relational planning, etc.), a specific area (local community, city or region) or specific actors (politicians, planners, organisations, networks, etc.). The project may focus on an international or Danish context or it can take the form of a comparative study between countries, regions, cities or local communities, or for instance between different theories, methods and solutions/scenarios. Most often, the students will find it relevant and useful to explore, discuss and develop contemporary or new urban planning and management concepts and understandings.

4.1 Approval of project idea/topic

As the students are expected to demonstrate the ability to find appropriate subjects themselves, there are no project proposals provided by the university. However, students are encouraged to discuss potential ideas and topics for the thesis work with staff members or the coordinator. Based on the student's tentative ideas, the coordinator can also aid in establishing contact to a potential supervisor.

Before starting the thesis work the Study Board must approve of the proposed topic. It means that the students must hand in a Final Thesis Notification, and it entails that the students must write a brief description (1/3 page) encompassing the following elements: 1) Introduction: brief introduction to the issue leading up to the research question, 2) Methodology: the approach to answering the research question, and 3) Anticipated outcome: what is the expected outcome of the project. The form must be submitted to the semester secretary, either on paper or attached to an email before the 17th of August in order to have the Study Board approve it before semester start. Before finally submitting the form, students are welcome to e-mail it to the semester coordinator or to a proposed supervisor for a preliminary approval.

A long thesis needs to correspond to the workload of 60 ECTS; however it is possible for the student to follow courses of a maximum of 10 ECTS and this will depreciate the workload of the project correspondingly. However it is the students own responsible to find relevant courses, and send a description of the courses to the Study Board secretary for approval.

Scope and expectations

The workload of this semester for internship, study abroad and project semester is 30 ECTS, corresponding to 900 hours. The workload includes examination and preparation for the exam. However, the workload for writing long thesis should reflect the 60 ECTS covering the 3rd and 4th semesters.

<p>Participants</p> <p>Degree students and guest students on the Urban Planning and Management programme.</p>
<p>Prerequisites for participation</p> <p>Student has completed the 1st semester and has followed courses and exams at the 2nd semester; guest students, etc. are exempted.</p> <p>Students who choose the internship must prepare a formalized Internship Agreement, which is entered between the internship site, the student and the study programme before date xx-xx-20xx. Students who choose to study abroad must have the study approved by the Study Board. Students who choose to write a long thesis must fill in and submit a 'Final Thesis Notification' to the study secretary, signed by supervisor or the 4th semester coordinator no later than the xx-xx-20xx.</p>
<p>Module activities (course sessions etc.)</p> <p>Students are responsible for organizing his/her own activities before and through the semester. The decision on which form of the semester to take should be made before the semester starts. The semester coordinator will assign supervisors after the decision has been made and approved before the semester starts.</p>
<p>Examination</p> <p>The examination will be an internal oral examination based on the project report or article. Internal grading, 7-point scale. For the internship, the learning goals formulated in the Curriculum as well as the learning goals formulated in the Individual Framework Agreement will constitute the assessment criteria in the examination.</p> <p>Please consult "Guide for project examination" via this link: http://www.tek-nat.aau.dk/uddannelse/studerende/</p> <p>Plagiarism and proper referencing</p> <p>The use of the internet makes it is very easy to find sources and good texts describing issues relevant to your projects. Unfortunately, the internet also facilitates the misuse of such sources as everything can be copied directly into your own documents. This, however, is illegal plagiarism; it is seriously condemned and must at all costs be avoided.</p> <p>Naturally, the same applies to sources in print. Generally, you should not use another author's phrases unless there is a specific reason for doing so. In this case, the phrases must be clearly marked in the report using italics and/or quotation marks combined with a reference to the author. Failure to do so is plagiarism, even if you did not intend to cheat. We have adapted an Oxford University rule of thumb saying that "if six or more consecutive words are the same as the source", then it must be marked as a quotation as described above and clearly referenced. Additionally – and again inspired by Oxford University – "fewer than 6 words should also be quoted when you borrow a particularly apt or striking phrase". Paraphrasing of other authors' work must also be properly referenced. Failure to do so is plagiarism, even if you did not intend to cheat. It is not even acceptable to present another author's idea without referring to the author. Failure to do so is plagiarism. In fact, making such references merely demonstrates that you are a well-read student who knows the area of study. Diagrams, figures, tables, photos and other graphical representations not made by you must also be properly referenced. Failure to do so is plagiarism.</p> <p>Plagiarism is utterly unacceptable and will lead to the rejection of the report and expulsion of the student from Aalborg University if discovered in a submitted report.</p> <p>The extensive use of properly referenced quotes from single sources - third of a page and up - on the grounds that "they write it better than we are able to" is not plagiarism and hence not illegal. However, it is poor judgement, considered poor student work and hence generally renders a poor impression. The extensive use of properly referenced quotes from single sources may of course be relevant under special circumstances, such as if you wish to discuss an EU directive, in which case, devoting e.g. a full page to the actual text may be appropriate. If in doubt, please consult your</p>

supervisor.

Several reference systems exist. Use one system consequently throughout the whole report and throughout the entire process including drafts. Sloppy reference methodology in the preparation of drafts will cause problems in the writing of your final report. You will most likely forget that parts of your text are in fact quotations – and these parts will be considered plagiarism in your submitted report. Below is a link to a description of the Chicago style (successor of Harvard) which we recommend you to use.

<http://libguides.murdoch.edu.au/Chicago>

All students can expect that every delivered project and all course submissions in the future can be assessed with a new state-of-the-art anti-plagiarism search engine (Ephorus).

Please also see this AAU link regarding plagiarism: <http://www.plagiarism.aau.dk/>

Example 2 module description: Cities Urban Management and Planning, 1st semester Aalborg University (Denmark)

<p>Tools and Systems of Sustainable Development <i>Danish and English title: Værktøjer og systemer i bæredygtig udvikling / Tools and Systems of Sustainable Development</i> <i>5 ECTS</i> <i>Activity code: IOK770003L</i></p>
<p>Location 1st semester Cities and Sustainability (JEMES CiSu); 1st semester Environmental Management and Sustainability Sciences (EMSS) Study board of Planning and Geography (at School of Architecture, Design and Planning) Aalborg University</p>
<p>Module coordinator Mr X, Associate Professor</p>
<p>Type and language Course module English</p>
<p>Objectives According to the Curriculum students that complete the module acquire the following:</p> <p><i>Knowledge</i></p> <ul style="list-style-type: none"> • Have thorough knowledge of different types of tools and systems for promotion of a sustainable development on an organisation level • Have understanding of strengths and weaknesses of different tools and systems in relation to the organizing context. <p><i>Skills</i></p> <ul style="list-style-type: none"> • Can analyse and assess different tools and approaches for anchoring of the environmental efforts in an organisation, just from mapping and documentation to ensure continuous environmental improvements through motivation, participation, etc. • Can use different tools for a product-oriented environmental effort, including life cycle assessment, eco-design, etc. • Can contribute to strengthening the social dimension in the effort around sustainability, including the introduction of Corporate Social Responsibility • Can – by means of different tools – assess effects of both strategic and project approaches regarding sustainable development • Can use theories on power, learning and organisation to assess which understanding of the context is embedded in different tools and systems. <p><i>Competences</i></p> <ul style="list-style-type: none"> • Can reflect critically on project-related choices of tools and systems and their significance for the environmental work in an organisation • Can currently adjust and adapt different tools and systems for the topical challenges and needs in an organisation.
<p>Academic content and basis The aim of this course is to provide the students with a thorough understanding of organisations and of the managerial and strategic implications of the environmental and social challenges facing businesses operating on international markets. The course will approach management in a company perspective but the same tools and systems can be applied to other organisations. The course will explain various management philosophies, business models and tools that firms can apply in order to</p>

measure, assess, and communicate environmentally and socially responsible performance and thus enhance competitiveness. The implications will be analysed and discussed from theoretical as well as empirical perspectives. Lectures and workshops focus on both theoretical and empirical perspectives. The course is divided into three inter-linked blocks:

1. Cleaner production at company level, eco-design and management systems: policies, objectives and targets
2. Life Cycle Assessment
3. Business strategies and innovation in networks

Scope and expectations

“Tools” is a 5 ECTS course meaning that you are expected to spend 130-150 hours work load. We are planning 15-17 interactions with 7 teachers. Different teachers have different approaches to learning. Some lectures require substantial readings and some require other types of preparation. All lecturers will expect you to have read the texts beforehand so that you can use your understanding to feed into the discussions during the lectures. Some lecturers will not spend any time going through the texts as that is an expected basis on which to build new approaches and concepts and other cases. The slides will therefore in most cases supplement the readings with totally new elements. All readings, slides, exercises and discussions are therefore considered equal elements. To pass the written exam you should have a clear overview of all the material before doing the exam, as you will not have enough time to read it during the exam. For the exam you can bring all the material you like: all that we present and all what you find yourself and – do bring a laptop computer.

Participants

Besides students from the two listed programmes there might be students from other programmes or people from industry or researchers attending part of the course. The LCA section (four lectures) is shared with the SEPM students.

Module activities (course sessions etc.)

The dates, exact timing, texts, location and other preparations for each session are shown on Moodle⁶ (<https://www.moodle.aau.dk/course/xxx>)

Two books are recommended:

1. Kørnøv et al (eds.) Tools for Sustainable Development, Aalborg University (2007)
2. Christophe Sempels, Jonas Hoffmann: Sustainable Innovation Strategy Creating Value in a World of Finite Resources, Palgrave Macmillan (2013)

Examination

- Pass or fail (no grades)
- 4 hour individual written exam. Partly open-ended questions and partly multiple choice. Expect plagiarism check

Exam:xx-xx-20xx

Re-exam if you fail: xx-xx-20xx

⁶ Moodle is the Virtual Learning Environment (VLE) for Aalborg University. Aalborg University uses Moodle to provide course materials and activities for present students.

Example 3 module description: Sustainable Design 1, Faculty of Design, Estonian Academy of Arts (Estonia)

SYLLABUS (filled in by the responsible unit)

Subject code	Subject name
	JÄTKUSUUTLIK DISAIN 1
<i>SUSTAINABLE DESIGN 1</i>	
Curriculum /responsible unit	FACULTY OF DESIGN

Study load (ECTS)	Study load (academic hours)	Language of instruction	Curriculum	Assessment method (differentiated assessment: exam/graded credit test; pass/fail assessment: credit test)	
Compulsory course	Elective				
6	48	Estonian		x	Credit test

Prerequisite course code	Prerequisite course name
-	-

Aim of the course	<ul style="list-style-type: none"> - The development of the theoretical knowledge and practical skills of sustainable design related to the principles of both Estonian and international higher education systems, the labour market demands for the development of sustainable and environmental-friendly services and products and the projected trends in design specialities. - The development of a creative person with a broad mind and good analytical skills who through his creative and innovative activities can enrich the environment of his area, work in an interdisciplinary and also international teams, and lead design projects. - The development of necessary skills and knowledge in order to implement the integrated process of design thinking and product development through various stages starting from the generation and definition of ideas up to prototyping, testing and production. - The provision of practical skills and knowledge for the implementation of sustainable entrepreneurship principles, primary environmental developments and the means and methods of sustainable product development and design in various spheres of design, including environmental design, interior design and architecture. - The aim of the instruction of sustainable design is: <ul style="list-style-type: none"> - to establish the terms and requirements for the student's motivated individual development, and the in-depth acquisition of professional skills, knowledge and experience in specialities of design and architecture; - to provide the skills for making selections pursuant to the principles of sustainable design;
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	<ul style="list-style-type: none"> - to shape the characteristics and beliefs on values and attitudes necessary for high-quality professional activities; - to provide the necessary knowledge for orienting in and coping with the environmental and social problems during the product development and production; - to develop the students' idiosyncratic and expressive creative style; - to develop the design thinking based on the students' problem solutions; - to provide the professional skills for the presentation of one's creations at exhibitions, competitions, media and publications; - to provide the professional skills and knowledge for participating in projects, teamwork and entrepreneurship; - to develop the skills and competence for research in the given area.
The course content	<p>The theoretical lectures and practical tasks of sustainable design provide the students with the basic theoretical and methodological knowledge in the field of economic and environmental studies and the humanities allowing them to contextualise the specific knowledge and develop their analytical, synthetical and comparative analysis skills and the ability to relate it to the daily professional issues. The lectures and practical tasks provide the students with an overview of the social and environmental impact of products' life cycle, the key principles of the economic system, the consumer behaviour and the peculiarities of production industry, and also teach them to implement the principles and techniques of sustainable product and service development.</p> <p>In the course of the practical work and project implementation, the students learn to create problems for the sustainable development of product and service design. The instruction is conducted pursuant to problem-based instruction method teaching the students of the faculties of design and architecture to work with design issues systematically in interdisciplinary work groups by analysing and solving problems and tasks independently, thus developing their skills for participating in projects, team work and entrepreneurship.</p> <p>The form of instruction:</p> <ul style="list-style-type: none"> - classroom lectures - practical assignments - workshops and seminars - group work project supervision - independent work in the implementation of analyses and projects.
Learning outcomes <i>Learning outcomes are the skills, knowledge and attitudes or their respective sets (competence) acquired as a result of learning the existence and/or achievement of which can be proved and assessed. The learning outcomes given in the Estonian Standard of Higher Education are on the minimum level,</i>	Having completed the lectures and tasks of the course, the student: <ul style="list-style-type: none"> - has the knowledge of sustainability, socio-economic functioning systems and legislative framework, knows the respective legislation and legal background and understands value creation; - can, pursuant to his specialisation, understand the environmental problems that may occur in the given context and consider the aspects of sustainability, can evaluate and cope with the environmental and social issues in the product and service development; - can analyse and evaluate design and product development in the light of sustainability and ecology; - knows the means for assessing the environmental impact, can conduct simple environmental impact evaluations on products and services and suggest and document design solutions improving

<p><i>every graduate must acquire i.e. them.</i></p>	<p>the environmental indicators of the product or service in the production, use and reuse;</p> <ul style="list-style-type: none"> - can use various methods and studies of eco-design, lifecycle methods and analytical means: LCA, material and component reuse, Design for Disassembly, design rules in material selection, structural layout etc - knows the development trends of sustainable design in the Estonian and international context and has a command of the terminology related to sustainable and eco-design; - has acquired the skills for conducting critical analysis and critical self-reflection, knows and can use the interdisciplinary methods within the scope of his profession; - can express his opinion both in oral and written form in various professional auditoriums and media. <p>Having performed the practical project work, the student:</p> <ul style="list-style-type: none"> - is able to participate in the process of design and product development and the respective applied research studies; - can analyse his own and others' artistic and design creation from the point of view of sustainability and participate in the work of the area of design and art; - can generate and develop creative ideas and implement them in an innovative/sustainable design process; - can work both individually and in a team, has a command of the communicative and teamwork skills as well as communication technologies necessary for participating in a design process by cooperating with specialists of other areas and entrepreneurs; - participates in the communication process between the designer and the design user, can facilitate and manage it; - can, pursuant to his specialisation, enter the art scene with his original creative work and/or design products and produce samples for both industry and small production with regard to principles of sustainability; - can professionally implement his work with the aid of various technological processes with regard to environmental and social problems; - has adaptive and improvisational skills, abilities to cope in a new environment and has a good command of critical self-reflective skills; - is ready to continue his studies and participate in in-service training; - can express his thoughts well in Estonian and at least in one foreign language both in oral and written form and present his creations to the public.
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SYLLABUS *(filled in by the lecturer)*

Lecturer	Xx and YY
Qualification	
Contact	IR

Contact hours (<i>academic hours</i>)		
Lectures / practical work	Seminars	Exam / assessment / credit
48		Credit test

Time of class	Class content	No. of hours	Comment
Sept 02	Course introduction: schedule, lectures etc	3	
Sept 09	PART 1: "General background: sustainable development – problems and challenges	3	
Sept 16	Sustainable development: environmental, social, economic and political framework	3	
Sept 23	Sustainable organisation – development and possibilities	3	
Sept, 30	Problems of sustainability – the example of waste	3	
Oct 07	Sustainable design, its strategies and tools	3	
Oct 14	The process of product development, design thinking	3	
Oct 21	The means of analysis for sustainable product development (the main evaluation methods for the product lifecycle)	3	
Oct 28	The means of analysis for sustainable product development (LCA, lifecycle evaluation, sustainable production, environmental impact etc).	3	
Nov 04	Social responsibility	3	
Nov 11	Waste, production waste	3	
Nov 18	Supply change management	3	
Nov 25	The marketing of sustainable products, communication, problems	3	
Dec 02	Evaluation of LCA work	3	
Dec 09	Project assessment	6	
Total	48		

<p>Assessment methods <i>The assessment method refers to the ways of assessing the achievement of learning outcomes (written or oral exam, a project with its presentation etc).</i></p>	<p>The assessment is course-specific. The subject is considered completed with the completion of the seminars and workshops included in the syllabus and the execution and presentation of the project work.</p> <p>ASSESSMENT REQUIREMENTS Participation in the classes – min 75% The due submission, exposition and presentation (oral and in pdf- format) of the group project. Each group must complete a poster in A1 format providing an overview of the ideas,</p>
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	<p>analysis and project suggestions.</p> <p>ASSESSMENT METHOD</p> <p>The assessment in the instruction includes: attitude to learning, individual analytical and generalisation skills. The assessment committee shall analyse the presented works pursuant to the initial task and the assessment shall be provided by way of individual vote.</p>
<p>Assessment criteria</p> <p><i>The assessment criteria are the detailed descriptions of the knowledge, skills and attitudes together with the respective level and extent, conditions and time limits, form etc the student must demonstrate through the given assessment method</i></p> <p><i>Pass/fail assessment is based on the threshold criteria, i.e. a minimum level showing if the required competence has been achieved or not (passed / failed).</i></p> <p><i>Differentiated assessment is based on grade criteria with the lowest positive mark equalling the threshold criterion and in case of higher performance the criteria for the basis of higher marks shall be respectively specified.</i></p>	<p>Pass:</p> <p>The idea of the project is good and the structure has been presented comprehensively and at a good level. The project is detailed, the proposed solutions are original and of good quality. The project has a clear unique concept with the author's part in and contribution to the group work evident, and the author can defend the project in a potential discussion.</p> <p>Fail:</p> <p>The project idea and structure includes the necessary parts, however, with uneven quality. The project is superficial. The level of proposed suggestions uneven. The project lacks a clear common concept, in case of a discussion the author has difficulties defending his part in and contribution to the group work.</p>
Compulsory and recommended reading	Shall be provided
Further information	-

Example 4 module description: Sustainable Design 2, Faculty of Design, Estonian Academy of Arts (Estonia)

SYLLABUS (filled in by the responsible unit)

Subject code	Subject name
	JÄTKUSUUTLIK DISAIN 2
SUSTAINABLE DESIGN 2	
Curriculum /responsible unit	FACULTY OF DESIGN

Study load (ECTS)	Study load (academic hours)	Language of instruction	Curriculum	Assessment method (differentiated assessment: exam/graded credit test; pass/fail assessment: credit test)	
Compulsory course	Elective				
6	48	Estonian		x	Credit test

Prerequisite course code	Prerequisite course code
DT7122	SUSTAINABLE DESIGN 1

Aim of the course	<ul style="list-style-type: none"> - The development of the theoretical knowledge and practical skills of sustainable design related to the principles of both Estonian and international higher education systems, the labour market demands for the development of sustainable and environmental-friendly services and products and the projected trends in design specialities. - The development of a creative person with a broad mind and good analytical skills who through his creative and innovative activities can enrich the environment of his area, work in an interdisciplinary and also international teams, and lead design projects. - The development of necessary skills and knowledge in order to implement the integrated process of design thinking and product development through various stages starting from the generation and definition of ideas up to prototyping, testing and production. - The provision of practical skills and knowledge for the implementation of sustainable entrepreneurship principles, primary environmental developments and the means and methods of sustainable product development and design in various spheres of design, including environmental design, interior design and architecture. - The aim of the instruction of sustainable design is: - to establish the terms and requirements for the student's motivated individual development, and the in-depth acquisition of professional skills, knowledge and experience in specialities of design and architecture;
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	<ul style="list-style-type: none"> - to provide the skills for making selections pursuant to the principles of sustainable design; - to shape the characteristics and beliefs on values and attitudes necessary for high-quality professional activities; - to provide the necessary knowledge for orienting in and coping with the environmental and social problems during the product development and production; - to develop the students' idiosyncratic and expressive creative style; - to develop the design thinking based on the students' problem solutions; - to provide the professional skills for the presentation of one's creations at exhibitions, competitions, media and publications; - to provide the professional skills and knowledge for participating in projects, teamwork and entrepreneurship; - to develop the skills and competence for research in the given area.
The course content	<p>The theoretical lectures and practical tasks of sustainable design provide the students with the basic theoretical and methodological knowledge in the field of economic and environmental studies and the humanities allowing them to contextualise the specific knowledge and develop their analytical, synthetical and comparative analysis skills and the ability to relate it to the daily professional issues. The lectures and practical tasks provide the students with an overview of the social and environmental impact of products' life cycle, the key principles of the economic system, the consumer behaviour and the peculiarities of production industry, and also teach them to implement the principles and techniques of sustainable product and service development.</p> <p>In the course of the practical work and project implementation, the students learn to create problems for the sustainable development of product and service design. The instruction is conducted pursuant to problem-based instruction method teaching the students of the faculties of design and architecture to work with design issues systematically in interdisciplinary work groups by analysing and solving problems and tasks independently, thus developing their skills for participating in projects, team work and entrepreneurship.</p> <p>The form of instruction:</p> <ul style="list-style-type: none"> - classroom lectures - practical assignments - workshops and seminars - group work project supervision - independent work in the implementation of analyses and projects.
Learning outcomes <i>Learning outcomes are the skills, knowledge and attitudes or their respective sets (competence) acquired as a result of learning the existence and/or achievement of which can be proved and assessed. The learning outcomes given in the Estonian Standard of Higher</i>	<p>Having completed the lectures and tasks of the course, the student:</p> <ul style="list-style-type: none"> - has the knowledge of sustainability, socio-economic functioning systems and legislative framework, knows the respective legislation and legal background and understands value creation; - can, pursuant to his specialisation, understand the environmental problems that may occur in the given context and consider the aspects of sustainability, can evaluate and cope with the environmental and social issues in the product and service

<p><i>Education are on the minimum level, i.e. they must be acquired by every graduate.</i></p>	<p>development;</p> <ul style="list-style-type: none"> - can analyse and evaluate design and product development in the light of sustainability and ecology; - knows the means for assessing the environmental impact, can conduct simple environmental impact evaluations on products and services and suggest and document design solutions improving the environmental indicators of the product or service in the production, use and reuse; - can use various methods and studies of eco-design, lifecycle methods and analytical means: LCA, material and component reuse, Design for Disassembly, design rules in material selection, structural layout etc - knows the development trends of sustainable design in the Estonian and international context and has a command of the terminology related to sustainable and eco-design; - has acquired the skills for conducting critical analysis and critical self-reflection, knows and can use the interdisciplinary methods within the scope of his profession; - can express his opinion both in oral and written form in various professional auditoriums and media. <p>•</p> <p>Having performed the practical project work, the student:</p> <ul style="list-style-type: none"> - is able to participate in the process of design and product development and the respective applied research studies; - can analyse his own and others' artistic and design creation from the point of view of sustainability and participate in the work of the area of design and art; - can generate and develop creative ideas and implement them in an innovative/sustainable design process; - can work both individually and in a team, has a command of the communicative and teamwork skills as well as communication technologies necessary for participating in a design process by cooperating with specialists of other areas and entrepreneurs; - participates in the communication process between the designer and the design user, can facilitate and manage it; - can, pursuant to his specialisation, enter the art scene with his original creative work and/or design products and produce samples for both industry and small production with regard to principles of sustainability; - can professionally implement his work with the aid of various technological processes with regard to environmental and social problems; - has adaptive and improvisational skills, abilities to cope in a new environment and has a good command of critical self-reflective skills; - is ready to continue his studies and participate in in-service training; - can express his thoughts well in Estonian and at least in one foreign language both in oral and written form and present his creations to the public.
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SYLLABUS (filled in by the lecturer)

Lecturer	RA, HM, IR, MV
Qualification	
Contact	IR

Contact hours (academic hours)		
Lectures / practical work	Seminars	Exam / assessment / credit
48		Credit test

Time class	of	Class content	No. of hours	Comment
20.01		Introduction: schedule, a seminar summarising the previous term. Introduction of Negavatt competition http://www.negavatt.ee , https://www.facebook.com/negavatt (submission of ideas February 1-26 2016)	3	
27.01/28.01		Project supervision	3	
03.02		Workshop / seminar	3	
10.02/11.02		Project supervision	3	
17.02/18.02		Project supervision	3	
02.03		Interim evaluation/criticism & workshop (mentors from Aalto Design Factory)	3	
09.03/10.03		Project supervision	3	
16.03/17.03		Project supervision	3	
23.03/24.03		Project supervision	3	
30.03/31.03		Project supervision	3	
06.04		Social entrepreneurship: workshop / seminar / visit to Lilleorg	3	
13.04/14.04		Project supervision	3	
20.04/21.04		Project supervision	3	
27.04/28.04		Project supervision	3	
3.-13.05		Project assessment with external assessors / public lecture	6	
Total		48		

<p>Assessment methods The assessment method refers to the ways of assessing the achievement of learning outcomes (written or oral exam, a project with its presentation etc).</p>	<p>The assessment is course-specific. The subject is considered completed with the completion of the seminars and workshops included in the syllabus and the execution and presentation of the project work.</p> <p>ASSESSMENT REQUIREMENTS Participation in the classes – min 75% The due submission, exposition and presentation (oral and in pdf- format) of the group project. Each group must complete a poster in A1 format providing an overview of the ideas, analysis and project suggestions.</p> <p>ASSESSMENT METHOD</p>
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	The assessment in the instruction includes: attitude to learning, individual analytical and generalisation skills. The assessment committee shall analyse the presented works pursuant to the initial task and the assessment shall be provided by way of individual vote.
<p>Assessment criteria</p> <p><i>The assessment criteria are the detailed descriptions of the knowledge, skills and attitudes together with the respective level and extent, conditions and time limits, form etc the student must demonstrate through the given assessment method</i></p> <p><i>Pass/fail assessment is based on the threshold criteria, i.e. a minimum level showing if the required competence has been achieved or not (passed / failed).</i></p> <p><i>Differentiated assessment is based on grade criteria with the lowest positive mark equalling the threshold criterion and in case of higher performance the criteria for the basis of higher marks shall be respectively specified.</i></p>	<p>Pass:</p> <p>The idea of the project is good and the structure has been presented comprehensively and at a good level. The project is detailed, the proposed solutions are original and of good quality. The project has a clear unique concept with the author's part in and contribution to the group work evident, and the author can defend the project in a potential discussion.</p> <p>Fail:</p> <p>The project idea and structure includes the necessary parts, however, with uneven quality. The project is superficial. The level of proposed suggestions uneven. The project lacks a clear common concept, in case of a discussion the author has difficulties defending his part in and contribution to the group work.</p>
Compulsory and recommended reading	Shall be specified
Further information	

6 Literature

Dahl, B., & Kolmos, A. (2013). Students and Supervisors' Views of Individual vs. Group Based Project Exams in Engineering Education. In Proceedings, the 41th Conference of the International Group for the European Society for Engineering Education. SEFI: European Association for Engineering Education.

Faculty of Engineering and Science and The Faculty of Medicine (2013). Examination Policies and Procedures for examinations at the Faculty of Engineering and Science and The Faculty of Medicine. Available: http://www.teknat.aau.dk/digitalAssets/80/80105_68838_eksamensordning_engelsk_eo_220413.pdf Accessed May 30, 2016.

Youtube (2013a) Problem-Based Project Work at Aalborg University (See <https://www.youtube.com/watch?v=OSqv7Gv0yxk>) Accessed June 9, 2016

Youtube (2013b) Project exam at TekNat, Aalborg University (See: <https://www.youtube.com/watch?v=uhQMY07Cw8>) Accessed June 9, 2016